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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 09/682,659

Filing Date: October 03, 2001

Appellant(s): HEY, JOHN

MAILED

SEP 19 2007

GROUP 2800

Brian M. Dingman
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 27 June 2007 appealing from the Office action mailed 17 October 2006.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

No amendment after final has been filed.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

6,340,994 B1	Margulis et al.	1-2002
4,740,836	Craig	4-1988

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 14-19, 21-26, 41 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Margulis et al., US 6,340,994 in view of Craig, US 4,740,836.

Regarding claims 14-19 and 21-26, Margulis discloses a system for stereoscopic viewing of an image (column 4, lines 27-49) comprising a means (260, CRT or LCD as well as column 1, lines 22-43 and column 6, lines 20-22) for displaying upon a generally flat surface a conventional stereoscopic pair of images (column 4, lines 27-49), proximate but separately from one another; and a means (245 with 404 and 510) for improving the stereoscopic match between the two images as viewed by distorting at least one of the images (column 13, lines 36-43 and column 16, lines 42-67) to counteract distortion caused by the viewer's perspective relative to the image (column 16, lines 42-50) or caused by image-mismatch caused by a viewing-device (column 16, lines 51-67) and an optical device adapted to be placed in front of and proximate to a viewer's eyes (e.g., glasses, column 4, lines 37-49). Although Margulis discloses multiple means of perceiving a stereoscopic image with an optical device (see column 4, lines 27-49), Margulis does not disclose an alternative means for providing the stereoscopic impression wherein the particulars of the optical device include a means for re-angling the optical axis for at least one eye, so that each eye generally targets the center of a respective one of the pair of images; in which the optical axis for exactly one eye is reangled; wherein the optical device comprises a pair of mirrors for each reangled eye; and wherein the optical device comprises a prism for each reangled eye; and the specifics of the image arrangement in which the images are arranged one above the other; wherein the images are displayed upon a surface large enough to subtend an immersive portion of the viewer's visual field; and wherein the images comprise the display for a video game, a televised display of still- or motion-picture images and a computer-

graphics display of still or motion picture images. Craig teaches a system for stereoscopic viewing of an image (fig. 4) comprising a means (11, fig. 1) for displaying upon a generally flat surface a conventional stereoscopic pair of images (13 and 15, fig. 1), proximate but separately from one another and in which the images are arranged one above the other; wherein the images are displayed upon a surface large enough to subtend an immersive portion of the viewer's visual field (column 8, lines 6-14); in which the optical axis for exactly one eye is reangled (column 5, lines 21-36); and wherein the images comprise the display for a video game, a televised display of still- or motion-picture images and a computer-graphics display of still or motion picture images (column 4, lines 37-39 and column 5, lines 1-2); and an optical device (41), which is a prism, adapted to be placed in front of and proximate to a viewer's eyes (fig. 4), which device is worn by the viewer (column 6, lines 11-14) comprising a means for re-angling the optical axis for at least one eye, so that each eye generally targets the center of a respective one of the pair of images (fig. 5 and column 7, line 35-column 8, line 14), employed to effect a stereoscopic meld of two 2-dimensional images (column 5, lines 49-55); and wherein the optical device alternatively comprises a pair of mirrors for each reangled eye (column 7, lines 31-34 and figs. 5b₁ and 5b₂). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the specific optical device and image arrangement of Craig in the stereoscopic system of Margulis et al. to eliminate the need to adjust for eye spacing of different viewers (Craig, column 2, lines 59-64) and provide the flexibility to view images in both two and three dimensions (Craig, column 2, lines 48-49).

Regarding claims 41 and 42, Margulis et al. in view of Craig as set forth above further disclose the viewing device located between the viewer's eyes and the generally flat surface (see at least fig. 4 of Craig).

(10) Response to Argument

Appellant argues that Margulis only discloses using digital image processing to improve the image quality of the monocular images *per se* and that this is not a means for improving the stereoscopic match between two images as viewed by distorting at least one of the images (see arguments, page 6, line 15-page 7, line 6). The examiner respectfully disagrees. First, Margulis states (page 13, lines 36-43) that "Geometric Transformation 404 can also improve auto stereoscopic 3D display systems in which multiple camera channels present a binocular display and each of a viewer's eye sees a different monocular view of a scene. Geometric Transformation 404 can construct each of the monocular views in accordance with the focus and motion adaptive filtering techniques described above." Therefore, the image quality of each image in the stereoscopic pair will be improved by geometric transformation (i.e., distortion, see comments below). Because the stereoscopic image is made up of both images, when each image is improved the stereoscopic match must also be improved.

Appellant further argues that Margulis does not disclose distorting at least one of the images and, more specifically, deliberately distorting the image prior to display (see arguments, page 7, line 7-page 8, line 5). Appellant states that "[e]ssentially, the aim of Margulis is to correct distortion, not introduce distortion as in the present claim." First, the examiner would like to point out that the primary objective of both Margulis and the instant application must be to correct distortion, otherwise the final image will inferior. Further it is the examiner's position

that, like the instant application, Margulis corrects for distortion by deliberately distorting the image prior to display. In column 16, lines 42-67, Margulis specifically discloses that distortion correction 510 (part of 404) is used to precompensate for projection distance differences or for PSF distortions caused by neighboring pixels being spread out by manipulating the pixels of the image. Therefore, Margulis does introduce a distortion to at least one image prior to display that would improve at least one image of the stereoscopic pair and consequently improve the stereoscopic match.

In response to appellant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). Craig provides various benefits as to why one of ordinary skill in the art would want to use that particular device as the stereoscopic device of Margulis like to eliminate the need to adjust for eye spacing of different viewers (Craig, column 2, lines 59-64) and provide the flexibility to view images in both two and three dimensions (Craig, column 2, lines 48-49).

The appellant further states that no one has ever deliberately distorted one or both images of a stereoscopic image pair in order to improve the stereoscopic match between the images and this in itself is evidence of nonobviousness (see arguments, page 13, paragraph 2). The examiner respectfully disagrees. As detailed above Margulis is evidence that it was known

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to deliberately distort one or both images of a stereoscopic image pair in order to improve the stereoscopic match between the images.

Appellant further argues that although Margulis discloses generally using stereoscopic display systems, Margulis is more concerned with correcting images when projected on a curved screen and does not specifically disclose counteracting image distortion caused by the viewer's perspective relative to the image (claim 18), or image mismatch caused by the viewing device (claim 19). The examiner respectfully disagrees. First, Margulis et al. techniques are not limited to a curved screen. Although, curved screen processing is addressed, the same techniques can be used with CRT- or LCD-based direct view systems (column 6, lines 20-23), which are well known flat screens (column 1, lines 22-43), and in head-mounted displays (see column 12, lines 45-52). Secondly, as stated in on column 13, lines 36-43, the image correction can be applied to a stereoscopic system in which each of the viewer's eyes sees a different monocular view of a scene and the geometric transformation can construct each of the scenes. Therefore when Margulis et al. precompensate for image distortions like keystoneing (column 16, lines 42-50) it would be images to each eye (i.e., distortion caused by the viewer's perspective relative to the image). Further when Margulis et al. compensate for radial distortion (see column 16, lines 51-67) introduced by lens systems (like a viewing-device in a stereoscopic device, e.g., glasses, see column 4, lines 37-49), Margulis et al. is correcting for image-mismatch caused by a viewing-device.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

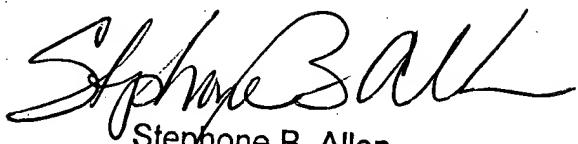
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For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,



Lee Fineman



Stephone B. Allen
Supervisory Patent Examiner

Conferees:

Stephone B. Allen 

Ricky Mack 